



Naval Education and
Training Command

NAVEDTRA 12525
May 1990
0502-LP-213-2100

Training Manual
(TRAMAN)

Construction Electrician 1

DISTRIBUTION STATEMENT A: Approved for public release; distribution is unlimited.

The public may request copies of this document by following
the purchasing instruction on the inside cover.



0502LP2132100

PREFACE

This training manual (TRAMAN) and its companion nonresident training course (NRTC), NAVEDTRA 82525, form a self-study package that will aid the Construction Electricians first class in fulfilling the requirements of their rate. Among these requirements are the abilities to perform tasks involved in the installation, maintenance, and repair of area lighting systems, airfield lighting systems, and power generation and distribution systems and the rigging and erecting of hoisting devices.

Designed for individual study and not formal classroom instruction, the TRAMAN provides subject matter that relates directly to the occupational standards of the Construction Electrician rating. The NRTC provides a way of satisfying the requirements for completing the TRAMAN. Assignments in the NRTC include learning objectives and supporting questions designed to lead the student through the TRAMAN.

This training manual was prepared by the Naval Education and Training Program Management Support Activity, Pensacola, Florida for the Chief of Naval Education and Training. Technical assistance was provided by the Naval Facilities Engineering Command, Alexandria, Virginia; the Naval Construction Training Center and the Civil Engineering Support Office, Port Hueneme, California; and the Naval Construction Training Center, Gulfport, Mississippi; and the Civil Engineering Support Office, Port Hueneme, California.

1990 Edition

**Stock Ordering No.
0502-LP-213-2100**

Published by
NAVAL EDUCATION AND TRAINING
PROGRAM MANAGEMENT SUPPORT ACTIVITY

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON, D.C.: 1990

THE UNITED STATES NAVY

GUARDIAN OF OUR COUNTRY

The United States Navy is responsible for maintaining control of the sea and is a ready force on watch at home and overseas, capable of strong action to preserve the peace or of instant offensive action to win in war.

It is upon the maintenance of this control that our country's glorious future depends; the United States Navy exists to make it so.

WE SERVE WITH HONOR

Tradition, valor, and victory are the Navy's heritage from the past. To these may be added dedication, discipline, and vigilance as the watchwords of the present and the future.

At home or on distant stations we serve with pride, confident in the respect of our country, our shipmates, and our families.

Our responsibilities sober us; our adversities strengthen us.

Service to God and Country is our special privilege. We serve with honor.

THE FUTURE OF THE NAVY

The Navy will always employ new weapons, new techniques, and greater power to protect and defend the United States on the sea, under the sea, and in the air.

Now and in the future, control of the sea gives the United States her greatest advantage for the maintenance of peace and for victory in war.

Mobility, surprise, dispersal, and offensive power are the keynotes of the new Navy. The roots of the Navy lie in a strong belief in the future, in continued dedication to our tasks, and in reflection on our heritage from the past.

Never have our opportunities and our responsibilities been greater.

CONTENTS

CHAPTER	Page
1. Area Lighting Systems	1-1
2. Airfield Lighting	2-1
3. Electrical Load Requirements	3-1
4. Solid-State Devices and Circuits	4-1
5. Power Generation and Distribution	5-1
6. Field Rigging and Hoisting Systems	6-1
7. Alarm Systems	7-1
APPENDIX	
I. Glossary	AI-1
II. Formulas and Conversion Tables	AII-1
III. Reference List	AIII-1
INDEX	INDEX-1

CREDITS

The illustrations listed below are included in this edition of *Construction Electrician 1* through the courtesy of the designated sources. Permission to use these illustrations is gratefully acknowledged. Permission to reproduce illustrations and other materials in this publication must be obtained from the source.

<u>SOURCE</u>	<u>FIGURES</u>
Basler Electric	4-7, 4-9, 4-10, 4-11, 4-12, 4-29
GE Lighting Systems	1-10 and 1-12 through 1-27, Table 1-2, Table 1-3
National Fire Protection Association	Tables 3-1 through 3-7, Table 5-3, Table 5-4, Notes for Tables 5-3 and 5-4
Sencore	4-22, 4-23, 4-25, 4-27, 4-28, 4-30, 4-31, 4-32, 4-33, and Table 4-1